

In the Claims:

Please cancel Claims 2, 4, 8, 20, 22 and 26 without prejudice or disclaimer.

Please amend the following claims:

1. (Amended) A microfluidic device for the detection of a target analyte in a sample comprising a solid support comprising:

- a) a sample inlet port;
- b) a cell handling module comprising a least one well port;
- c) a first microchannel to allow fluid contact between said sample inlet port and said well port;
- d) a detection module comprising:
 - i) a detection electrode;
 - ii) a self-assembled monolayer;
 - iii) a binding ligand; and
 - iv) a detection inlet port to receive said sample;
- e) a second microchannel to allow fluid contact between said well port and said detection inlet port.

3. (Amended) A device according to claim 1 further comprising a reagent storage well.

5. (Amended) A device according to claim 1 wherein said cell handling module comprises a cell lysis module.

6. (Amended) A device according to claim 1 wherein said cell handling module comprises a cell removal module.

7. (Amended) A device according to claim 1 wherein said cell handling module comprises a cell concentration module.

9. (Amended) A device according to claim 1 wherein said sample handling module comprises a separation module.

10 A device according to claim 9 wherein said separation module comprises an electrophoresis module.

11. (Amended) A device according to claim 1 further comprising a reaction module.

12. A device according to claim 11 wherein said target analyte is a nucleic acid and said reaction module comprises a nucleic acid amplification module.

13. (Amended) A device according to claim 1 wherein said reaction module comprises a thermal module.

14. A device according to claim 1 further comprising a pump.

15. A device according to claim 14 wherein said pump is an electroosmotic (EO) pump.

16. A device according to claim 14 wherein said pump is an electrohydrodynamic (EHD) pump.

17 A device according to claim 1 further comprising a valve.

18. (Amended) A microfluidic device for the detection of a target analyte in a sample comprising a solid support comprising:

a) a sample inlet port;

b) a reagent storage well comprising an outlet port;

c) a detection module comprising:

i) a detection electrode;

ii) a self-assembled monolayer;

iii) a binding ligand; and

iv) a detection inlet port to receive said sample;

d) a first microchannel to allow fluid contact between said sample inlet port and said detection inlet port;

- e) a second microchannel to allow fluid contact between said outlet port and said detection module; and
- f) a pump.

19. (Amended) A method for the detection of a target analyte in a sample comprising:

a) introducing said sample to a sample inlet port of a microfluidic device comprising a solid support comprising:

- i) at least one cell handling module comprising a well inlet port and a well outlet port;
- ii) a first microchannel to allow fluid contact between said sample inlet port and said cell handling module;
- iii) a detection electrode comprising:
 - 1) a self-assembled monolayer;
 - 2) a binding ligand; and
 - 3) a detection inlet port to receive said sample; and
- iv) a second microchannel to allow fluid contact between said cell handling module and said detection inlet port; and

b) detecting the presence of said target analyte.

21. A method according to claim 19 wherein said support further comprises a reagent storage well.

23. (Amended) A method according to claim 19 wherein said cell handling module comprises a cell lysis module.

24. (Amended) A method according to claim 19 wherein said cell handling module comprises a cell removal module.

25. (Amended) A method according to claim 19 wherein said cell handling module comprises a cell concentration module.

27. (Amended) A method according to claim 19 wherein said sample handling module comprises a separation module.

28. A method according to claim 27 wherein said separation module comprises an electrophoresis module.

29. (Amended) A method according to claim 19 further comprising a reaction module.

30. A method according to claim 29 wherein said target analyte is a nucleic acid and said reaction module comprises a nucleic acid amplification module.

31. (Amended) A method according to claim 19 wherein said reaction module comprises a thermal module.

32. A method according to claim 19 wherein said solid support further comprises a pump.

33. A method according to claim 32 wherein said pump is an electroosmotic (EO) pump.

34. A method according to claim 32 wherein said pump is an electrohydrodynamic (EHD) pump.

35. A method according to claim 19 wherein said support further comprises a valve.